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EXAMINER

WIN, AUNG T

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2617

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/665,252

Applicant(s)

DONOVAN, TIMOTHY

Examiner

Aung T. Win

Art Unit

2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-121 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-121 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09/19/2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

Claims 106, 107, 108, 113, 114, 115, 119, 120 & 121 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter (first wireless circuit and second wireless circuit operated and controlled according as claimed) which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Examiner cannot find any support in the disclosure to Claims' limitation " first wireless circuit and second wireless circuit operated and controlled according as claimed " as cited in Claims 106, 107, 108, 113, 114, 115, 119, 120 & 121. Examiner requests the applicant specify the drawing, page, column or line number, which support the claim limitation. Applicant is required to cancel the new matter in the reply to this Office Action.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "claimed first wireless circuit and second wireless circuit" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended

replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-4, 7-10, 19-21, 37-40, 43-45, 46, 55-57, 73-76, 79-82, 84-86, 102 & 109 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US20040253996A1) in view of Karaoguz (US20040029620A1).

Art Unit: 2617

1.1 Regarding Claims 1, 102 & 109, Chen discloses a SCP-STA wireless LAN station (claimed wireless station) that communicates with other wireless LAN station CTRL-STA in a local area network (LAN), wherein

SCP-STA station transitions between an active mode and a low power mode and transmits data during a predetermined time slot that is assigned to said SCP-STA station after transition to active mode in which said time slot is not assigned to other wireless LAN stations in said LAN. [SCP-STA station wakes up at assigned time slot for accessing medium to send or receive the packet and enter sleep mode during the other remaining contention period: 0034, 0037, 0047, 0057, 0061, 0065] [0015, 0052-0058] [0053 & 0061]. Chen does not explicitly disclose MAC device and RF radio transceiver. However, it is obvious to one of ordinary skill in the art that the SCP-STA station as disclosed would have been implemented with medium access controller and RF transceiver for communicating each other as claimed because the station is controlled to access medium for transmitting and receiving data.

Karaoguz also teaches that wireless LAN station is implemented with medium access control device and RF radio transceiver communicating with each other to control power saving mode [Figure 6].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention of made to modify Chen's wireless station as taught by Karaoguz wireless LAN station. One of ordinary skill in the art at the time of invention of made

Art Unit: 2617

would have been motivated to do this to provide improved synchronization and power saving method for power saving wireless LAN stations.

1.2 Claim 37 is an apparatus claim rejected for the same reason as stated above in Claim 1 rejection because claimed means are substantially closed to corresponding means of claim 1.

1.3 Claim 73 is a method claim rejected for the same reason as stated above in Claim 1 rejection because claimed method is substantially closed to corresponding method executed by means of claim 1.

1.4 Claims 2, 38, 74 are rejected for the same reason as stated above in Claim 1 rejection because Chen discloses Adhoc Wireless LAN in which the wireless stations in the network receive data from each other in active mode and enter sleep mode thereafter [Adhoc Wireless LAN in which stations have active state and power-saving state and are able to transmit and receive data through a radio medium directly to and from each other: 0015, 0052-0058] [0034, 0037, 0047, 0057, 0061, 0065].

1.5 Claims 3, 39, 75 are rejected for the same reason as stated above in Claim 1 rejection. Chen discloses that stations wake up at the start of each beacon interval to receive beacon (i.e., claimed timing beacon) and enters to power-saving mode after receiving beacon prior to receiving next beacon (i.e., claimed subsequent beacon [0053 & 0061]).

1.6 Claims 4, 40, 76, 7, 43 & 79 are rejected for the same reason as stated above in Claim 1 rejection. Chen discloses that stations wake up at the start of each beacon interval to receive beacon (i.e., claimed timing beacon) and enters to power-saving mode after receiving beacon prior to receiving next beacon (i.e., claimed subsequent beacon [0053 & 0061]). Chen also discloses that wireless station need to update network time as claimed (wireless station synchronize its timing to received beacon i.e., network time [0052 & 53]).

1.7 Claims 8, 44 & 80 are rejected for the same reason as stated above in Claim 1 rejection. Chan discloses that assigned time slots are followed by Short Inter-Frame Space SIFS for the wireless station to upload data [0049-0051] [Figure 11].

1.8 Claims 9, 45 & 81 is also rejected for the same reason as stated above in Claim 1 rejection. Chan discloses that time slots are assigned every beacon interval as stated

Art Unit: 2617

above in Claim 1 rejection. (reads on after prior assigned time slot expires because prior assigned time slots are valid for prior beacon interval).

1.9 Claims 10, 46 & 82 are rejected for the same reason as stated above in Claim 1 rejection. Chan discloses that wireless devices are configured to operate according to Distributed Coordination Function in which the wireless station is provided with time period interval for transmit and receive data at each beacon interval before re-entering to power saving mode and i.e., after last wireless stations assigned to time slot corresponds to last beacon interval [0062].

1.10 Claims 19-21, 55-57 & 84-86 are rejected for the same reason as stated above in Claim 1 rejection. Modified method is 802.11 WLAN compatible method [See background and summary] used in ad-hoc network].

2. Claims 22, 58 & 87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US20040253996A1) in view of Mahany et al. (US20060280140A9).

2.1 Regarding Claims 22, Chen discloses wireless local area network (LAN), comprising:

A first wireless station (CTRL-STA wireless LAN station as stated above in Claim 1 rejection) that assign time slots for the second wireless station to transmit and receive data in active mode [See Claim 1 rejection];

A second wireless station (SCP-STA wireless LAN station as stated above in Claim 1 rejection) transmit data in assigned time slots in active mode and reentering into low power mode [See Claim 1 rejection] [SCP-STA station wakes up at assigned time slot for accessing medium to send or receive the packet and enter sleep mode during the other remaining contention period: 0034, 0037, 0047, 0057, 0061, 0065] [0015, 0052-0058] [0053 & 0061]. Chen does not clearly teach that the first wireless station also selectively operates in low power and active modes that initiates LAN although Chen teaches that any power saving wireless station can be operated as the control wireless station [Summary].

Mahany also teaches that any power saving wireless station can be operated as the control wireless station to form a wireless network and to re-entering to sleep mode if there is no communications with other wireless station [0061 & 0070].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention of made to modify Chen's first wireless station as claimed to selectively operates in low power mode and active mode as taught by Mahanoy's WLAN network control device. One of ordinary skill in the art at the time of invention of made to do this to employ improved power saving method to control network device of wireless LAN system.

2.2 Claim 58 is rejected for the same reason as stated above in Claim 22 rejection because Claim 58 comprises Wireless LAN network substantially closed to corresponding network as claimed in Claim 22.

2.3 Claim 87 is rejected for the same reason as stated above in Claim 22 rejection because Claim 87 a method claim substantially closed to corresponding method executed by the network as claimed in Claim 22.

3. Claims 23-27, 59-63, 88-90, 30-33, 66-69, 93-96, 34-36, 70-72, 97-99, 5, 6, 28, 29, 41, 42, 64, 65, 77, 78, 91 & 92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US20040253996A1) in view of Mahany et al. (US20060280140A9), further in view of Karaoguz (US20040029620A1).

3.1 Regarding Claims 23, 59 power saving wireless stations in the modified system as stated above rejection must be implemented with medium access controller and RF transceiver for communicating each other as claimed because the station is controlled for transition between active and power saving modes if there is data to transmit to other wireless stations and is controlled to access medium to wake up from power saving mode for transmitting and receiving data via assigned time slots in active mode [control device communicate with other wireless devices at active mode and control

Art Unit: 2617

device is put to sleep when there is no communications with other wireless devices 0070].

Modified system and method does not explicitly disclose MAC device and RF radio transceiver. However, it is obvious to one of ordinary skill in the art that the SCP-STA station as disclosed would have been implemented with medium access controller and RF transceiver for communicating each other as claimed because the station is controlled to access medium for transmitting and receiving data.

Karaoguz discloses medium access control device and RF radio transceiver communicating with each other to control power saving mode [Figure 6].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention of made to modify Chen's wireless station as taught by Karaoguz wireless LAN station. One of ordinary skill in the art at the time of invention of made would have been motivated to do this to provide improved synchronization and power saving method for power saving wireless LAN stations.

3.2 Claims 24, 60 & 88 are rejected for the same reason as stated above in Claim 23 rejection because Chen discloses Adhoc Wireless LAN in which the wireless stations in the network receive data from each other in active mode and enter sleep mode thereafter [Adhoc Wireless LAN in which stations have active state and power-saving state and are able to transmit and receive data through a radio medium directly to and from each other: 0015, 0052-0058] [0034, 0037, 0047, 0057, 0061, 0065].

3.3 Claims 25, 26, 61, 62 & 89 are rejected for the same reason as stated above in Claim 23 rejection. Chen discloses that stations wake up at the start of each beacon interval to receive beacon (i.e., claimed timing beacon) and enters to power-saving mode after receiving beacon prior to receiving next beacon (i.e., claimed subsequent beacon [0053 & 0061]).

Claims 27, 30, 63, 90, 66 & 93 are rejected for the same reason as stated above in Claim 23 rejection. Chen discloses that stations wake up at the start of each beacon interval to receive beacon (i.e., claimed timing beacon) and enters to power-saving mode after receiving beacon prior to receiving next beacon (i.e., claimed subsequent beacon [0053 & 0061]). Chen also discloses that wireless station need to update network time as claimed (wireless station synchronize its timing to received beacon i.e., network time [0052 & 53]).

3.4 Claims 31, 67 & 94 are rejected for the same reason as stated above in Claim 23 rejection. Chan discloses that assigned time slots are followed by Short Inter-Frame Space SIFS for the wireless station to upload data [0049-0051] [Figure 11].

3.5 Claims 32, 68 & 95 are also rejected for the same reason as stated above in Claim 23 rejection. Chan discloses that time slots are assigned every beacon interval

as stated above in Claim 1 rejection. (reads on after prior assigned time slot expires because prior assigned time slots are valid for prior beacon interval).

3.6 Claims 33, 69 & 96 are rejected for the same reason as stated above in Claim 23 rejection. Chan discloses that wireless devices are configured to operate according to Distributed Coordination Function in which the wireless station is provided with time period interval for transmit and receive data at each beacon interval before re-entering to power saving mode and i.e., after last wireless stations assigned to time slot corresponds to last beacon interval [0062].

3.7 Claims 34-36, 70-72, 97-99 are rejected for the same reason as stated above in Claim 23 rejection. Modified method is 802.11 WLAN compatible method [See background and summary] used in ad-hoc network.

3.8 Regarding Claims 5, 28, 41, 64, 77 & 91, modified system and method discloses receiving timing beacon as rejections stated above but does not explicitly teach setting network time as claimed.

Mahany discloses that control wireless station sends the beacons at fixed intervals of time or alternately beacons are sent in variable intervals. Wireless station resynchronizes based on with network time information (claimed prior beacon time) and specified beacon interval information comprised in received beacon from control device

[0061-0080]. Mahany also teaches that the wireless station is needed to resynchronize in order to wake up from power-saving mode timely and accurately for receiving next beacon. At the time of invention of made, one of ordinary skill in the art would realize that there is a transmission delay and processing delay in packet data transmission. It is obvious to one skill in the art that said delay must be taken into consideration in Mahany resynchronization method in order to in order to wake up from power-saving mode timely and accurately for receiving next beacon.

Therefore, it would have been to one of ordinary skill in the art at the time of invention of made to modify Chen's wireless station as taught by Myles's timing synchronization method to set the network time as claimed. One of ordinary skill in the art at the time of invention of made to do this to provide improved synchronization and power-saving method for receiving beacons transmitted at variable time intervals.

3.9 Claims 6, 29, 42, 65, 78 & 92 are rejected for the same reason as stated above in Claim 5 rejection. Chen discloses transmitting a beacon after back off period if the station missed a beacon [0111] therefore, the method as modified would teach as claimed.

4. Claim 52 is rejected is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US20040253996A1) in view of Karaoguz (US20040029620A1), further in view of Karaoguz et al. (US20040029621A1).

4.1 Regarding Claim 52, modified method and system does not explicitly disclose gaming application. Karaoguz et al. discloses wireless LAN system for gaming application [See Figures]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention of made to modify the method and the system to associate with a host that runs gaming application as claimed in order to provide wireless gaming services.

5. Claims 11 & 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US20040253996A1) in view of Karaoguz (US20040029620A1), further in view of Jokinen (US005774813A).

5.1 Regarding Claims 11 & 47, wireless stations as modified teaches as claimed in Claims 1 & 37 but does not explicitly disclose voltage regulators as claimed. Jokinen discloses a wireless device [Column 1, Lines 13-17 & Column 4, Line 40-45] implemented with at least two voltage regulators that regulate supply voltage according to network device operating modes i.e., low power mode or active mode [Figure 4 & 5] [Background & Summary]. The wireless device as taught by Jokinen comprises:

a first voltage regulator that regulates supply voltage during said active mode and that is powered down during said low power mode [Regulator 2, 3 or 4: Figure 4 & 5];
and

a second voltage regulator that dissipates less power than said first voltage regulator and that regulates supply voltage during said low power mode [Regular 1: Figure 4 & 5], wherein said

the wireless device selects said first voltage regulator during said active mode [Regulator 2, 3 or 4: Figure 4 & 5] and said second voltage regulator during said low power mode [Regulator 2, 3 or 4: Figure 4 & 5] [Column 7, Line 40-Column 8 Line 16] [Column 3, Line 26-40].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention of made to modify wireless device with voltage regulators as taught by Jokinen to operate wireless device as claimed. One of ordinary skill in the art at the time of invention of made would have been motivated to do this to provide improved simple method in reducing the power consumption in low power wireless devices during low power mode.

6. Claims 12, 14, 18, 48, 50 & 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US20040253996A1) in view of Karaoguz (US20040029620A1), further in view of Jokinen (US005774813A) and Hawkins et al. (US005586308A).

6.1 Regarding Claims 12, 18, 48 & 54, Modified device as stated above comprises a base band processor (BBP) that performs radio frequency mixing [Karaogus: 158 in Figure 6] [0037, 0043, 0054] and that communicates with said MAC device and said RF transceiver but does not explicitly teach first phase locked loop and second phase locked loop according to crystal oscillator input as claimed although it is obvious to one skill in the electronic art that PLL generate clock signals based on oscillator input. Hawkins discloses clock control unit with plurality of phase locked loops to clock the various subsystems of the integrated processor for power management in wireless devices. Hawkins teaches crystal oscillator that outputs a timing signal to plurality of phase locked loops to clock the various subsystems by further generating appropriate clock singles to the various subsystems [Background & Summary].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention of made to further modify the device as claimed with the power management method using crystal oscillator that outputs a timing signal inputted to plurality of phase locked loops to generate appropriate clock signals for RF transceiver and base band processor during active mode. One of ordinary skill in the art at the time of invention of made would have been motivated to do this to provide improved power management control in the wireless device.

Claims 14 & 50 are rejected for the same reason as stated above in Claims 12 & 48 rejections because modified device teaches shutting down voltage regulator and other appropriate circuit components in low power mode.

7. Claims 13, 15, 17, 49, 51 & 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US20040253996A1) in view of Karaoguz (US20040029620A1), further in view of Jokinen (US005774813A), Hawkins et al. (US005586308A) and Devries et al. (US006873215B2).

7.1 Regarding Claims 13, 17, 49 & 53 modified method does not explicitly teaches the device utilizing two oscillators although it is obvious to one skill in the electronic art that the device is operated with low power oscillator as claimed.

Devries teaches utilizing crystal oscillator and low power oscillator as claimed for power management in electronic devices [Summary] [Column 3, Line 44-60] [Figure 1].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention of made to further modify as claimed to utilize two oscillators as claimed with the teaching of Devries power management method. One of ordinary skill in the art at the time of invention of made would have been motivated to do this to provide improved power management control in the wireless device.

8. Claims 15 & 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US20040253996A1) in view of Karaoguz (US20040029620A1), further in view of Jokinen (US005774813A), Hawkins et al. (US005586308A) and Devries et al. (US006873215B2) and Norman et al. (US006178332B1).

8.1 Claims 15 & 51 are rejected for the same reasons as stated above in Claims 13 & 49 rejections. At the time of invention of made, it is obvious that MAC device as modified would have counter to control the device according as claimed. Hawkins teaches utilizing counters to control oscillators although modified device does not explicitly teaches as claimed [Column 8, Line 7-45].

Norman teaches wireless device utilizing counters to operating the device in low power and high power mode accordingly as claimed [Column 3, Line 30-37].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention of made to further modify the device as claimed with Timing unit with counter as taught by Norman for operating the corresponding device in different modes. One of ordinary skill in the art at the time of invention of made would have been motivated to do this to provide improved low power management in wireless devices.

9. Claims 103, 110 & 116 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US20040253996A1) in view of Karaoguz (US20040029620A1), further in view of Gardner et al. (US005950120A).

Regarding Claims 103, 110 & 116, Karaoguz also teaches oscillator operating in lower frequency during low power mode while shutting down base band section (analog and digital converter) and all radio receiver elements [Karaoguz: 0046, 0047]. Therefore, it is obvious to one of ordinary skill in the art the oscillator as modified would operate as

Art Unit: 2617

reference oscillator for RF radio portions i.e., receiver and base band section although Karaoguz does not explicitly teach as claimed.

Gardner also teaches high frequency reference clock used in active mode and low frequency reference clock used in power saving mode in which radio receiver and base band processing sections are shut down during power saving mode [Abstract & Background] [Operation of sleep logic circuitry: Column 5].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention of made to further modify the device to function the oscillator as claimed. One of ordinary skill in the art at the time of invention of made would have been motivated to do this provide further improvement in power management system of low power saving wireless device.

10. Claims 104, 111 & 117 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US20040253996A1) in view of Karaoguz (US20040029620A1), further in view of Jokinen (US005774813A).

10.1 Regarding Claims 104, 111 & 117, wireless stations as modified teaches as claimed in Claims 1 & 37 but does not explicitly disclose voltage regulators as claimed. Jokinen discloses a wireless device [Column 1, Lines 13-17 & Column 4, Line 40-45] implemented with at least two voltage regulators that regulate supply voltage according to network device operating modes i.e., low power mode or active mode [Figure 4 & 5] [Background & Summary]. The wireless device as taught by Jokinen comprises:

a first voltage regulator that regulates supply voltage during said active mode and that is powered down during said low power mode [Regulator 2, 3 or 4: Figure 4 & 5];
and

a second voltage regulator that dissipates less power than said first voltage regulator and that regulates supply voltage during said low power mode [Regular 1: Figure 4 & 5], wherein said

the wireless device selects said first voltage regulator during said active mode [Regulator 2, 3 or 4: Figure 4 & 5] and said second voltage regulator during said low power mode [Regulator 2, 3 or 4: Figure 4 & 5] [Column 7, Line 40-Column 8 Line 16] [Column 3, Line 26-40].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention of made to modify wireless device with voltage regulators as taught by Jokinen to operate wireless device as claimed. One of ordinary skill in the art at the time of invention of made would have been motivated to do this to provide improved simple method in reducing the power consumption in low power wireless devices during low power mode.

11. Claims 105, 112 & 118 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US20040253996A1) in view of Karaoguz (US20040029620A1), further in view of Gardner et al. (US005950120A) and Jokinen (US005774813A).

11.1 Regarding Claims 105, 112 & 118, Karaoguz also teaches oscillator operating in lower frequency during low power mode while shutting down base band section (analog and digital converter) and all radio receiver elements [Karaoguz: 0046, 0047].

Therefore, it is obvious to one of ordinary skill in the art the oscillator as modified would operate as reference oscillator for RF radio portions i.e., receiver and base band section although Karaoguz does not explicitly teach as claimed.

Gardner also teaches high frequency reference clock used in active mode and low frequency reference clock used in power saving mode for supplying clocks to corresponding circuitry in which radio receiver and base band processing sections are shut down during power saving mode [Abstract & Background] [Operation of sleep logic circuitry: Column 5].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention of made to further modify the device to use two oscillators as claimed. One of ordinary skill in the art at the time of invention of made would have been motivated to do selectively maintain device components during power saving modes to reduce power consumption.

The device as modified above does not explicitly teach voltage regulator as claimed although it is obvious to one of ordinary skilled in the art that oscillators are controlled by voltage controlled circuits in order to adjust the frequencies. Jokinen discloses a wireless device [Column 1, Lines 13-17 & Column 4, Line 40-45] implemented with at least two voltage regulators that regulate supply voltage according to network device

Art Unit: 2617

operating modes i.e., low power mode or active mode [Figure 4 & 5] [Background & Summary]. The wireless device as taught by Jokinen comprises:

a first voltage regulator that regulates supply voltage during said active mode and that is powered down during said low power mode [Regulator 2, 3 or 4: Figure 4 & 5];
and

a second voltage regulator that dissipates less power than said first voltage regulator and that regulates supply voltage during said low power mode [Regular 1: Figure 4 & 5], wherein said

the wireless device selects said first voltage regulator during said active mode [Regulator 2, 3 or 4: Figure 4 & 5] and said second voltage regulator during said low power mode [Regulator 2, 3 or 4: Figure 4 & 5] [Column 7, Line 40-Column 8 Line 16] [Column 3, Line 26-40].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention of made to modify wireless device with voltage regulators as taught by Jokinen to operate wireless device as claimed. One of ordinary skill in the art at the time of invention of made would have been motivated to do this to provide improved simple method in reducing the power consumption in low power wireless devices during low power mode.

12. Claims 106, 107, 108, 113, 114, 115, 119, 120 & 121 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US20040253996A1) in view of

Art Unit: 2617

Karaoguz (US20040029620A1), further in view of Gardner et al. (US005950120A) and Jokinen (US005774813A) and Khlal et al. (US007046977B2).

11.1 Regarding Claims 106, 107, 108, 113, 114, 115, 119, 120 & 121, the device as modified above in Claims 105, 112 & 118 does not explicitly teach two wireless circuits.

Khat discloses wireless devices with at least two wireless circuits i.e, GSM, WCDMA and Bluetooth modules [cellular interface module 16 & Bluetooth module 5: Figures] [Column 5, Line 23-Column 9] in which the wireless circuits are selectively operated in powering saving modes by supplying higher or lower frequency clocks.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention of made to modify the wireless device as claimed to selectively operate different wireless circuits in dual or tri modes wireless devices. One of ordinary skill in the art at the time of invention of made would have been motivated to do this provide improved power management in dual modes wireless devices.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aung T. Win whose telephone number is (571) 272-7549. The examiner can normally be reached on 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duc Nguyen can be reached on (571) 272-7503. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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